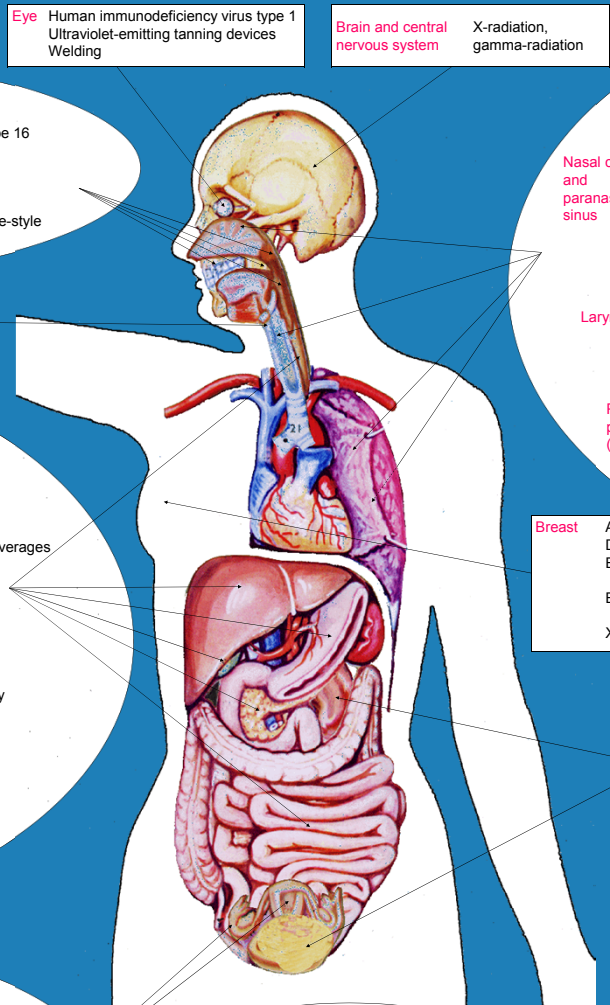


# IARC Monographs : The known causes of human cancer by organ site



**Oral cavity** Alcoholic beverages  
Betel quid with tobacco  
Betel quid without tobacco  
Human papillomavirus type 16  
Smokeless tobacco  
Tobacco smoking

**Tonsil** Human papillomavirus type 16

**Salivary gland** X-radiation, gamma-radiation

**Pharynx (oro-, hypo- and/or NOS)** Alcoholic beverages  
Betel quid with tobacco  
Human papillomavirus type 16  
Tobacco smoking

**Nasopharynx** Epstein-Barr virus  
Formaldehyde  
Salted fish, Chinese-style  
Wood dust

**Eye** Human immunodeficiency virus type 1  
Ultraviolet-emitting tanning devices  
Welding

**Brain and central nervous system** X-radiation, gamma-radiation

**Lung** Aluminium production  
Arsenic and inorganic arsenic compounds  
Asbestos (all forms)  
Beryllium and beryllium compounds  
Bis(chloromethyl)ether; chloromethyl methyl ether (technical grade)  
Cadmium and cadmium compounds  
Chromium (VI) compounds  
Coal, indoor emissions from household combustion  
Coal gasification  
Coal-tar pitch  
Coke production  
Diesel engine exhausts  
Gamma-radiation  
Haematite mining (underground)  
Iron and steel founding  
MOPP (vincristine-prednisone-nitrogen mustard-procarbazine mixture)  
Nickel compounds  
Outdoor air pollution  
Outdoor air pollution, particulate matter in  
Painter (occupational exposure as)  
Plutonium  
Radon-222 and its decay products  
Rubber production industry  
Silica dust, crystalline  
Soot  
Sulfur mustard  
Tobacco smoke, secondhand  
Tobacco smoking  
X-radiation

**Nasal cavity and paranasal sinus** Isopropyl alcohol manufacture using strong acids  
Leather dust  
Nickel compounds  
Radium-226 and its decay products  
Radium-228 and its decay products  
Tobacco smoking  
Wood dust

**Larynx** Acid mists, strong inorganic  
Alcoholic beverages  
Asbestos (all forms)  
Tobacco smoking

**Thyroid** Radioiodines, including iodine-131 (exposure during childhood and adolescence)  
X-radiation, gamma-radiation

**Stomach** *Helicobacter pylori*  
Rubber production industry  
Tobacco smoking  
X-radiation, gamma-radiation

**Upper aerodigestive tract** Acetaldehyde associated with consumption of alcoholic beverages

**Liver (hepatocellular carcinoma)** Aflatoxins  
Alcoholic beverages  
Estrogen-progestogen contraceptives  
Hepatitis B virus  
Hepatitis C virus  
Plutonium  
Thorium-232 and its decay products  
Tobacco smoking (in smokers and in smokers' children)

**Oesophagus** Acetaldehyde associated with consumption of alcoholic beverages  
Alcoholic beverages  
Betel quid with tobacco  
Betel quid without tobacco  
Smokeless tobacco  
Tobacco smoking  
X-radiation, gamma-radiation

**Breast** Alcoholic beverages  
Diethylstilbestrol  
Estrogen-progestogen contraceptives  
Estrogen-progestogen menopausal therapy  
X-radiation, gamma-radiation

**Liver (angiosarcoma)** Vinyl chloride

**Gall bladder** Thorium-232 and its decay products

**Biliary tract** *Chlonorchis sinensis*  
*Opisthorchis viverrini*

**Pancreas** Smokeless tobacco  
Tobacco smoking

**Colon and rectum** Alcoholic beverages  
Tobacco smoking  
X-radiation, gamma-radiation

**Anus** Human immunodeficiency virus type 1  
Human papillomavirus type 16

**Urinary bladder** Aluminium production  
4-Aminobiphenyl  
Arsenic and inorganic arsenic compounds  
Auramine production  
Benzidine  
Chlornaphazine  
Cyclophosphamide  
Magenta production  
2-Naphthylamine  
Painter (occupational exposure as)  
Rubber production industry  
*Schistosoma haematobium*  
Tobacco smoking  
*ortho*-Toluidine  
X-radiation, gamma-radiation

**Kidney** Tobacco smoking  
Trichloroethylene  
X-radiation, gamma-radiation

**Renal pelvis and ureter** Aristolochic acid, plants containing  
Phenacetin  
Phenacetin, analgesic mixtures containing  
Tobacco smoking

**Endometrium** Estrogen menopausal therapy  
Estrogen-progestogen menopausal therapy  
Tamoxifen

**Uterine cervix** Diethylstilbestrol (exposure *in utero*)  
Estrogen-progestogen contraceptives  
Human immunodeficiency virus type 1  
Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59  
Tobacco smoking

**Vagina** Diethylstilbestrol (exposure *in utero*)  
Human papillomavirus type 16

**Vulva** Human papillomavirus type 16

**Ovary** Asbestos (all forms)  
Estrogen menopausal therapy  
Tobacco smoking

**Multiple sites (unspecified)** Cyclosporine  
Fission products, including Strontium-90  
X-radiation, gamma-radiation (exposure *in utero*)

**All cancers combined** 2,3,7,8-Tetrachlorodibenzo-*para*-dioxin

**Bone** Plutonium  
Radium-224 and its decay products  
Radium-226 and its decay products  
Radium-228 and its decay products  
X-radiation, gamma-radiation

**Endothelium (Kaposi sarcoma)** Human immunodeficiency virus type 1  
Kaposi sarcoma herpes virus

**Leukaemia/lymphoma** Azathioprine  
Benzene  
Busulfan  
1,3-Butadiene  
Chlorambucil  
Cyclophosphamide  
Cyclosporine  
Epstein-Barr virus  
Etoposide with cisplatin and bleomycin  
Fission products, including Strontium-90  
Formaldehyde  
*Helicobacter Pylori*  
Hepatitis C virus  
Human immunodeficiency virus type 1  
Human T-cell lymphotropic virus type 1  
Kaposi sarcoma herpes virus  
Melphalan  
MOPP (vincristine-prednisone-nitrogen mustard-procarbazine mixture)  
Phosphorus-32, as phosphate  
Rubber production industry  
Semustine [1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea, or methyl-CCNU]  
Thiotepa  
Thorium-232 and its decay products  
Tobacco smoking  
Tresulfan  
X-radiation, gamma-radiation

**Skin (melanoma)** Solar radiation  
Polychlorinated biphenyls  
Ultraviolet-emitting tanning devices

**Skin (other malignant neoplasms)** Arsenic and inorganic arsenic compounds  
Azathioprine  
Coal-tar distillation  
Coal-tar pitch  
Cyclosporine  
Methoxsalen plus ultraviolet A  
Mineral oils, untreated or mildly treated  
Shale oils  
Solar radiation  
Soot  
X-radiation, gamma-radiation

**Group 1 agents with less than sufficient evidence in humans** 2,3,4,7,8-Pentachlorodibenzofuran  
Polychlorinated biphenyls with a WHO TEF ("dioxin-like")  
4,4'-Methylenebis(2-chloroaniline) (MOCA)  
Alpha- and beta-particle emitters  
Areca nut  
Aristolochic acid  
Benzidine, dyes metabolised to Benzo[a]pyrene  
Ethanol in alcoholic beverages  
Ethylene oxide  
Etoposide  
Ionizing radiation (all types)  
Neutron radiation  
*N*-Nitrosornicotine (NNN) and 4-(*N*-nitroso-methylamino)-1-(3-pyridyl)-1-butanone (NNK)  
Ultraviolet radiation

